

A New Species of the Genus *Mecyclothorax* Sharp from New South Wales (Insecta: Coleoptera, Carabidae: Psydrinae)

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ABSTRACT. *Mecyclothorax moorei* n.sp. (Insecta: Coleoptera: Carabidae: Psydrinae) is described from northeastern New South Wales, Australia. The species is closely related to *Mecyclothorax punctatus* (Sloane) which is distributed from inland southern New South Wales through Victoria into southwestern Western Australia. The new species and *M. punctatus* are distinguished from all other Australian species of *Mecyclothorax* by small size, compact body shape, and remarkably coarse punctation of the pronotum and elytra.

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Psydrinae (or Psydrini) is a diverse subfamily (or tribe) of carabid beetles, in terms of general morphology and habits. These beetles live in leaf litter on the ground in closed forests, and on or under bark of a variety of trees in forest, woodland, and even fairly dry areas (Baehr, 2003, 2005, 2007). With respect to lineages and to morphology worldwide, the group is most diverse in Australia (Moore, 1963; Moore *et al.*, 1987; Baehr, 1999) and many subgroups have representatives in cool or even cold temperate habitats, not only in Australia, but also in New Zealand, southern South America and on a number of subantarctic islands. Some groups, however, transgressed the southern cool temperate region and moved in to tropical (mostly montane) regions, for example, in northern Queensland and New Guinea, as well as certain Pacific island groups, where they have undergone remarkable radiation (Baehr, 1995, 1999, 2003, 2005, 2007; Laroche & Larivière, 2007; Liebherr, 2006, 2008; Moore, 1984; Moore *et al.*, 1987; Perrault, 1978, 1992). A few species even occur in Africa and the Holarctic region.

One of the most prolific genera of Psydrinae, in terms of numbers of existing species, is the genus *Mecyclothorax*

Sharp, 1903 which is widely distributed in the Australian-Pacific area including New Guinea, New Zealand, Tahiti, and Hawaii, with one species even occurring on Mt. Kinabalu in northern Borneo (Baehr & Lorenz, 1999). In Australia, (including Norfolk and Lord Howe Islands and Tasmania) 23 taxa of *Mecyclothorax* have so far been recorded; they range from Atherton and Windsor Tablelands along the east coast through Queensland and New South Wales, through Victoria, Tasmania, and southern South Australia to southern Western Australia. Moore (1984) and Baehr (2003) published partial taxonomic treatments, but a number of very similar species are still in need of revision.

During a recent visit to the Australian Museum, Sydney, and while checking the collection for additional material for forthcoming revisions of Australian carabid beetles, I found three specimens of an unusual, small, *Mecyclothorax* beetle. A decade ago the specimens had already been denoted as a new species by Barry Moore. Comparison with the only other similar Australian species, *Mecyclothorax punctatus* (Sloane, 1895), confirmed that the specimens indeed belong to a separate and closely related species which is described below.

Methods

Measurements were taken using a stereo microscope with an ocular micrometer. Body length was measured from apex of labrum to apex of elytra. Body lengths, therefore, may slightly differ from those specified by other authors. Length of pronotum was measured from mid of apex to the most advanced part of base. Length of elytra was measured from the most advanced part of humerus to the very apex.

In the taxonomic survey standard methods are used. The male genitalia were removed from a specimen after being relaxed overnight in a moisturizing jar, then briefly cleared in hot KOH. The habitus photograph was manipulated using SPOT Advanced for Windows 3.5 and Corel Photo Paint 11.

The male holotype and one female paratype of the new species are located in the Australian Museum, Sydney (AMS), one female paratype is located in the working collection of the author at Zoologische Staatssammlung, München (CBM).

Taxonomy

Mecyclothorax Sharp, 1903

Mecyclothorax Sharp, 1903, *Fauna Hawaiiensis* 3: 243, 1901–1910. Type species: *Cyclothorax montivagus* Blackburn, 1878, designated by Andrewes, 1939: 135. Geographic distribution: Australia, New Zealand, Pacific Islands.

Mecyclothorax moorei n.sp

Figs 1–3

Type material. HOLOTYPE ♂, site 32AR NSW Banda Rd about 4.5 km E of Hastings Forest Hwy 31°09'S 152°25'E Mount Boss State Forest 17 1100m (NPWS Survey) 4 Feb–9 Apr 1993 M. Gray, G. Cassis (AMS K241125). PARATYPES, 1 ♀, same data (CBM); 1 ♀, site 20BG NSW: Main Ck, track off Mt Tindal Td 29°43'S 152°38'E Ramornie SF 92 110m (NPWS Survey) 4 Feb–9 Apr 1993 M. Gray, G. Cassis (AMS K241131).

Diagnosis. Small, compact, dorsally convex species, characterized by exceptionally coarse punctation of the upper surface of the pronotum and the elytral striae. Distinguished from the only similar species, *Mecyclothorax punctatus* (Sloane), by shorter and more oviform elytra, much more abbreviated elytra striae, and far less dense punctation of the pronotum.

Description. *Measurements.* Length: 3.0–3.25 mm; width: 1.2–1.4 mm; ratios: width/length of pronotum: 1.26; width base/apex of pronotum: 1.13–1.16; width pronotum/head: 1.41–1.44; length/width of elytra: 1.27–1.33; width elytra/pronotum: 1.32–1.40.

Colour. Rusty red, centre of head, pronotum, and disk of elytra darker, piceous to almost blackish, but dark colouration of elytra very ill delimited. Suture, base, and margins of elytra reddish, antennae reddish, mouth parts and legs dirty yellow. Lower surface of head, prothorax, and middle of abdomen piceous, rest reddish.



Fig. 1. *Mecyclothorax moorei* n.sp., female paratype, habitus. Body length: 3.25 mm.

Head. Considerably narrower than pronotum. Eyes laterally projected, orbits short, c. $\frac{1}{8}$ of length of eye, forming a distinct angle with the lateral part of the head. Eyes separated from frons by a narrow furrow. Frontal furrows very deep, irregularly sinuate, running from clypeal seta, then suddenly turned out towards the eye, ended at anterior supraorbital seta. Centre of frons and lateral parts outside of frontal furrows convex. Clypeal suture deep, clypeus bisetose, punctures large and deep. Labrum anteriorly very slightly concave, six-setose. Mandibles of moderate size, at apex suddenly incurved. Seta in outer scrobe elongate. Mentum with wide, obtuse, triangular tooth. Two mental setae and four gular setae present, all setae very elongate. Glossa truncate at apex, rather narrow, bisetose, paraglossae membranous, far surpassing glossa. Lacinia elongate, sparsely spinose at inner margin. Terminal palpomeres of

both palpi asetose. Antenna short, antennomeres 7–10 c. $1\frac{1}{3} \times$ as long as wide. Posterior supraorbital seta situated slightly in front of posterior margin of eye. Upper surface of head without any microreticulation, impunctate apart from a few very coarse punctures on lateral parts of frons near the eyes. Surface very glossy.

Pronotum. Wide, laterally and dorsally convex. Apex straight or even slightly convex, apical angles not produced. Lateral margins in apical half markedly convex, in basal half straight and oblique, just in front of basal angles shortly and weakly sinuate. Basal angles angulate and slightly produced. Base in middle straight, laterally slightly excised. Both, apex and base not margined, marginal sulcus narrow throughout, not widened towards base. Median line fine and inconspicuous, not attaining apex nor base. Basal grooves deep, short, linear. Anterior transversal sulcus barely indicated, basal transverse sulcus fairly deep. Both marginal setae present, the anterior one situated at the widest diameter at or slightly in front of middle, the posterior one at basal angle. Disk with sparse, very coarse, and somewhat irregularly spaced punctures, distance between punctures at least as large, and mostly much larger than diameter of punctures. Surface without any microreticulation, absolutely smooth, very glossy.

Elytra. Very short and wide, dorsally very convex, remarkably oviform. Humeri wide, very gently angulate, lateral margin convex throughout. Base completely bordered. Scutellar stria indicated only by one or two large punctures, situated in first interval, scutellar pore and seta situated at or slightly laterad of origin of first stria. First stria slightly impressed and marked by a row of coarse punctures, stria ends at apical third or fourth of elytra. Other striae very vaguely indicated as rows of scattered, rather coarse punctures, but almost the whole surface without distinct striae. Intervals apart from first absolutely depressed. Dorsal setiferous punctures situated at position of third stria, rather inconspicuous, the anterior one situated in or slightly behind basal third, the posterior one situated at apical third. Setae elongate. Series of marginal setae consisting of 7 anterior and 5–6 posterior setae that are

widely separated in middle, punctures coarse, setae, if unbroken, very elongate. At the position where the third and fifth intervals would end, either with a short seta. Intervals without any microreticulation and punctures, absolutely smooth, very glossy. Posterior wings very short.

Lower surface. Lateral parts of prothorax and mesothorax, and prosternum with dense and very coarse punctures, the diameter of which is larger than the distance between the punctures. Metepisternum short, quadrate. Surface of abdomen without any microreticulation and punctures, glossy. Terminal sternum in both sexes quadrisetose.

Legs. Moderately elongate. Four basal tarsomeres of male protarsus slightly widened, first to third tarsomeres asymmetrically squamose on lower surface. Mesotibia and metatibia with remarkably distinct microreticulation on the upper surface.

Male genitalia (Fig. 2). Genital ring moderately elongate, asymmetrically triangular, apex moderately wide, fairly elongate. Aedeagus slightly turned to the left side (in beetle), rather short and compact (in genus), lower surface evenly concave, in front of apex slightly more curved down. Apex short and wide, probably obtuse at tip, but the very tip in the single male destroyed. Ostium rather short. Internal sac rather complexly folded, with a sclerotized spine-like flagellum and several partly sclerotized plates within. Parameres dissimilar, left comparatively stout, probably with elongate, tapering, spine-like apex, but apex broken in the male. Right paramere narrow and elongate, with evenly tapering apex, with 2 short apical setae, and about six rather elongate setae along lower margin.

Female genitalia (Fig. 3). Gonocoxite 1 without any ensiform setae at ventro-apical margin. Gonocoxite 2 rather short, with short apex and two large dentiform ventro-lateral ensiform setae of about similar size below middle of lateral margin. Near apex with a large, oblong pit but apparently with only a single nematiform seta originating from that pit. In middle of dorso-median surface with a large, dentiform, dorso-median ensiform seta. Lateral plate with a densely setose area at median apical margin.

Variation. Very little variation noted.

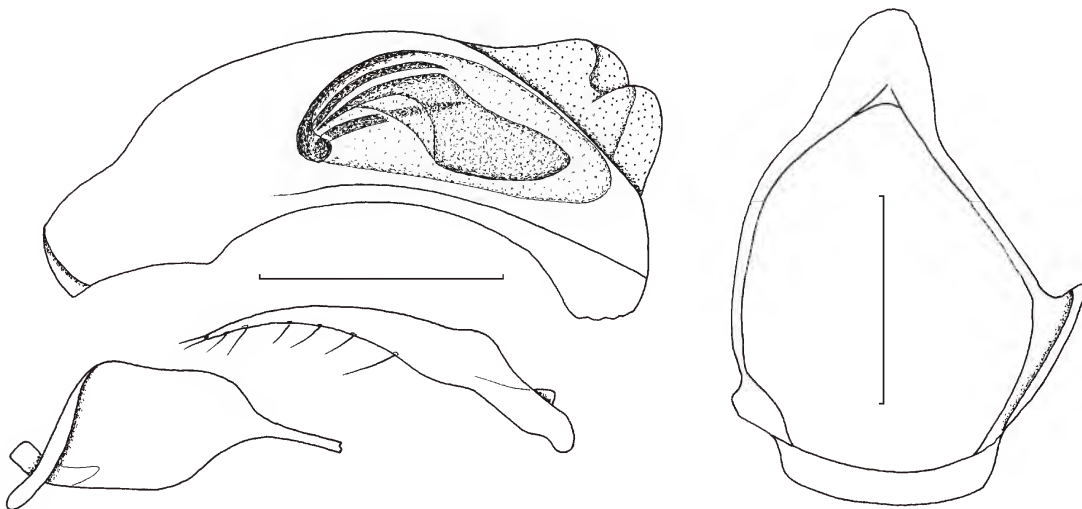


Fig. 2. *Mecyclothorax moorei* n.sp., male aedeagus, parameres and genital ring. Scales: 0.25 mm.

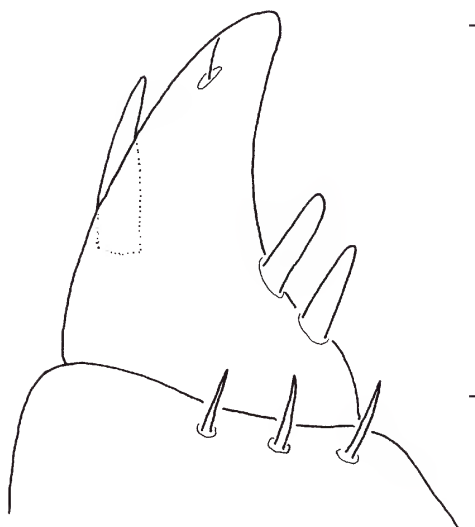


Fig. 3. *Mecyclothorax moorei* n.sp., female gonocoxites 1 and 2. Scale: 0.1 mm.

Distribution. Recorded only from a restricted area in north-eastern New South Wales.

Etymology. The specific name is a patronym in honour to Dr Barry Moore, famous senior specialist of Australian carabid beetles, who already had identified the species as a new one.

Collecting circumstances. Unknown.

Remarks

This small but distinctive species is quite different in external features from most other Australian species of the genus *Mecyclothorax*. It is similar to, and most probably quite closely related to, *M. punctatus* (Sloane). The latter has comparable compact and convex body shape and a similar, very coarse punctuation of pronotum and elytral striae. The main differences are (a) in the shape of the elytra, they are shorter and more oviform in *M. moorei*, (b) the much less-dense punctuation of the pronotum in *M. moorei*, and (c) the much more abbreviated elytra striae in *M. moorei*.

Among the Australian species of *Mecyclothorax* both *moorei* and *punctatus* form a distinct subgroup which, on the basis of external morphology, is rather different from the “normal-shaped” species of the *ambiguus-punctipennis*-lineage of the genus. With respect to body shape and small size, both species seem to be more closely related to the small species which occur in the rainforests of northern Queensland (*M. storeyi* Moore, 1984; *M. lewisensis* Moore, 1984; *M. impressipennis* Baehr, 2003; and *M. inflatus* Baehr, 2003) than to the common species in the surrounding areas, e.g., *M. punctipennis* (Macleay, 1871) and its allies.

Nothing is known about the habits and life history of the new species, apart from that it probably lives in closed forest at various altitudes, where it may occur on the ground in leaf litter.

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